INTERNATIONAL TSUNAMI INFORMATION CENTER

NEWSLETTER

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VOL. I, No. 1 -- March 5, 1968

NEW DIRECTOR FOR ITIC

CDR Robert C. Munson was appointed to serve as Director of the International Tsunami Information Center in Honolulu and as Pacific Field Director for the U. S. Coast and Geodetic Survey, ESSA. CDR Munson assumed his new post February 12, 1968, succeeding CAPT David M. Whipp, who recently retired after 28 years of service.

MEETING OF ICG

The first meeting of the International Coordinating Group on the Tsunami Warning System will be held at the East-West Center in Honolulu, Hawaii, March 25-28, 1968. The Group was officially established in 1966 by by Intergovernmental Oceanographic Commission's Resolution (IOC/IV-Res 1) adopted at the IOC Paris meetings of November 3-12, 1965. Its members are: Canada, Chile, Japan, U.K., U.S.A., and U.S.S.R.

The purpose of this meeting will be to discuss the international aspects of the Tsunami Warning System as it affects Pacific countries and to report on current research pertinent to tsunamis.

The following is a suggested provisional agenda for the meeting:

1. Registration of Delegates.
2. Opening of the meeting.
3. Election of the Chairman and other officers of the meeting.
4. Report of the Director of the International Tsunami Information Center.
5. National reports on the development of the Tsunami Warning System and other related scientific and technical achievements since the 1965 meeting of the IOC Working Group on the Tsunami Warning System, and review of progress made with respect to the resolution adopted at that meeting.
6. Communication system of Tsunami warning.
7. Review and future plans of the existing observations networks.
8. Exchange of information relating to tsunamis.
9. Cooperative efforts for Tsunami research.
10. Other business.

ITIC NEWSLETTER

This is the first issue of the ITIC NEWSLETTER which will be prepared quarterly for the benefit of tsunami workers in academic institutions and agencies in the Pacific connected with the Warning System.

Please submit material to:

International Tsunami Information Center
P. O. Box 3887
Honolulu, Hawaii, 96812

THE TSUNAMI OF OCTOBER 17, 1966 IN PERU - George Pararas-Carayannis, International Tsunami Information Center.

The earthquake which occurred on the 17th of October 1966 in the vicinity of Lima, Peru was followed by a seismic sea wave which damaged the Peruvian Coast from Chimbote to San Juan. The epicenter of this earthquake was established to be about 70 km off the Coast of Pativilca, 200 km north of the City Lima, at 10.7° S and 78.7° W. Its focal depth was 60 km.

The first tsunami wave arrived at Callao at 17:32 (local time) but the greatest wave of 3.40 m height (range between maximum crest and trough) was produced at 19:40 (local time). About the same time waves three meters in range inundated La Punta, Chcuito, Ancon, Huaura, Huacho, and the resort of Buenos Aires in the City of Trujillo.

Within 50-minutes after the quake, at 17:48, the same wave arrived at Chimbote and San Juan, which are about 800 km apart. It appears therefore that the tsunami generating area does not coincide with the epicenter of the earthquake and must have been extending at least 240 km more to the south, probably fronting the coast of Chilca. Some of the places along the coast where devastating effects were experienced were at Casma and at Caleta Tortuga, where the waves exceeded six meters in range, tearing down the majority of structures neighboring the square.

From these accounts it can be deduced that the tsunami originated in the zone of the submarine trench facing Chilca, giving rise to the foregoing waves which caused serious destruction in Caleta Tortuga, Casma, Puerto Chimu and Culebras.

The port of Casma, about 360 km north of Lima, suffered the greatest damage. The losses there can be estimated around 40 million "soles" ($4 million). Many fish-flour factories were severely damaged and the embarkation wharf was cut into pieces. In the region of Huarmey, 90% of the houses were damaged. All of the losses of life at Huacho, Lima, and Callao resulted from the earthquake and not from the tsunami.

Reference: "El Commercio" de Lima, Peru, October 18, 19, 1966.

TSUNAMI TRAVEL TIME CHARTS - Gaylord Miller, University of Hawaii, Joint Tsunami Research Effort, ESSA.

A generalized computer method exists for the production of travel time charts. A series of preliminary charts has been produced for the Tsunami Warning System. Figures 1-4 are examples of these charts much reduced from the original 60 x 60 cm size. The base chart used is an ESSA, U.S. Coast and Geodetic Survey Chart No. 3090 cut down to include only the Pacific Ocean area.

The computational method is especially adapted to the type of input data available. Input data consists of depth values on a one degree grid prepared by Menard and Smith and Scripps Institution of Oceanography. These data are available from the National Oceanographic Data Center. The average absolute error in these data is believed to be less than 300 meters. This error limits the possible precision to which a trans-Pacific travel time may be computed to between 15 to 30-minutes.

Calculations of this type are carried out one step at a time. The wave ray, a line perpendicular to the wave front or wave crest, is advanced along in small steps. At each advance a new ray curvature is calculated. The ray then curves toward shallower water and away from deeper water. A property of a wave ray is that no wave energy crosses the ray. Thus if two rays converge the total energy between them remains constant but becomes more concentrated. Conversely, diverging rays indicate that the wave energy is being spread over a greater distance and that the waves will then be relatively smaller.

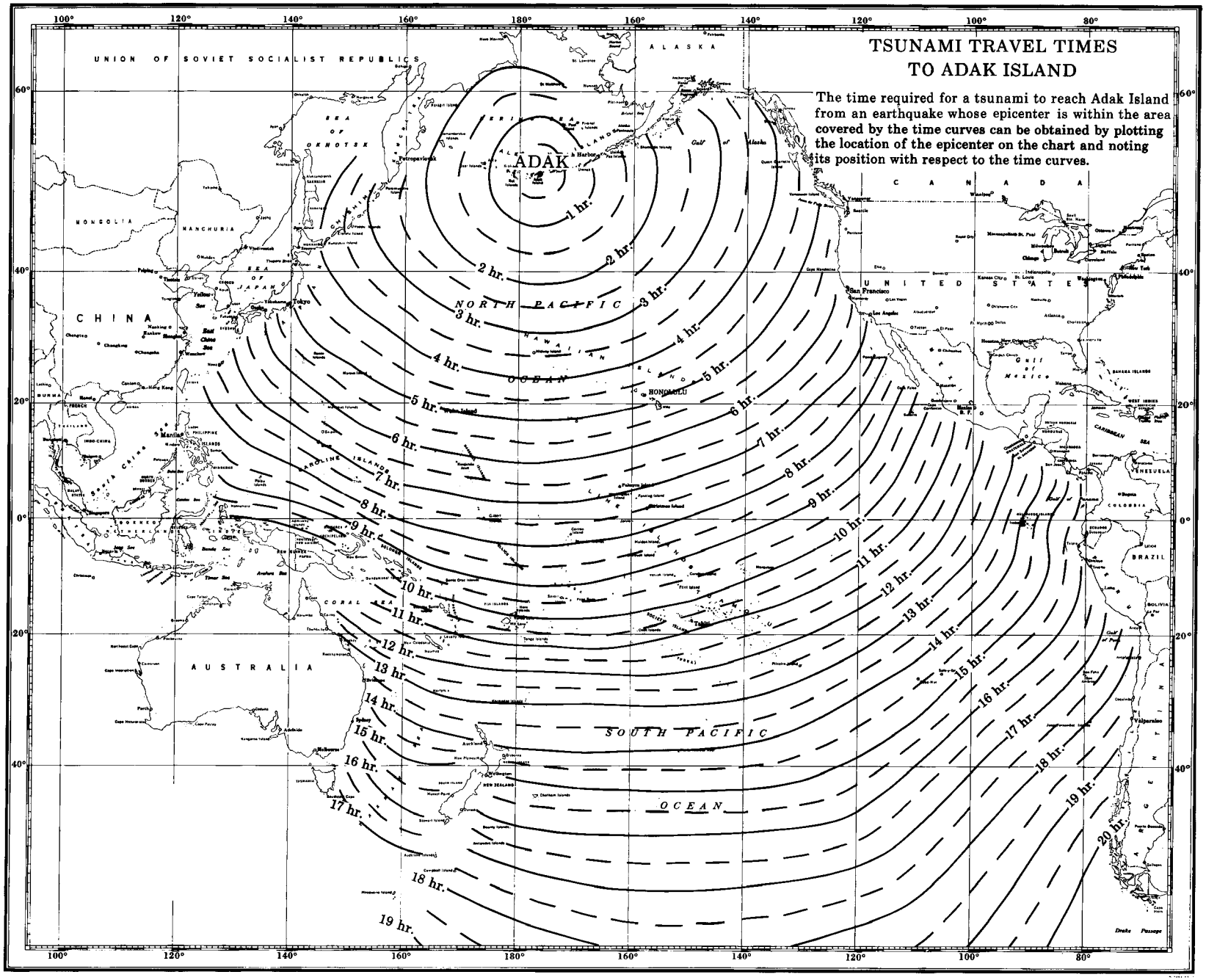
Points of equal travel time along the different rays are connected together to give a wave "front." The wave front in this case is the greatest extent to which a disturbance could have propagated at a given time.

New travel time charts have been prepared for the locations indicated in Table 1. The Coast and Geodetic Survey is establishing a new format for the publication of a report containing these charts. This report will be similar to the existing C&GS publication containing travel time charts. As new charts become available we will list them in the ITIC Newsletter.

Currently the actual steps in production of a chart are: 1) specification of origin and starting angles for the rays, 2) computation and preparation of a special computer tape which serves as input to an automatic plotter, 3) plotting and transfer of data to a working base chart, 4) filling in any gaps which may have occurred by specifying new starting angles, 5) final drafting of the chart for reproduction and distribution. The computer we are using is an IBM-360/50.

TABLE 1 - Travel Time Charts

Acapulco	Eniwetok Island	Marcus Island
Attu	Kwajalein Island	Nauru Island
Canton Island	Johnston	Samoa Island
Dutch Harbor	La Jolla	Wake Island



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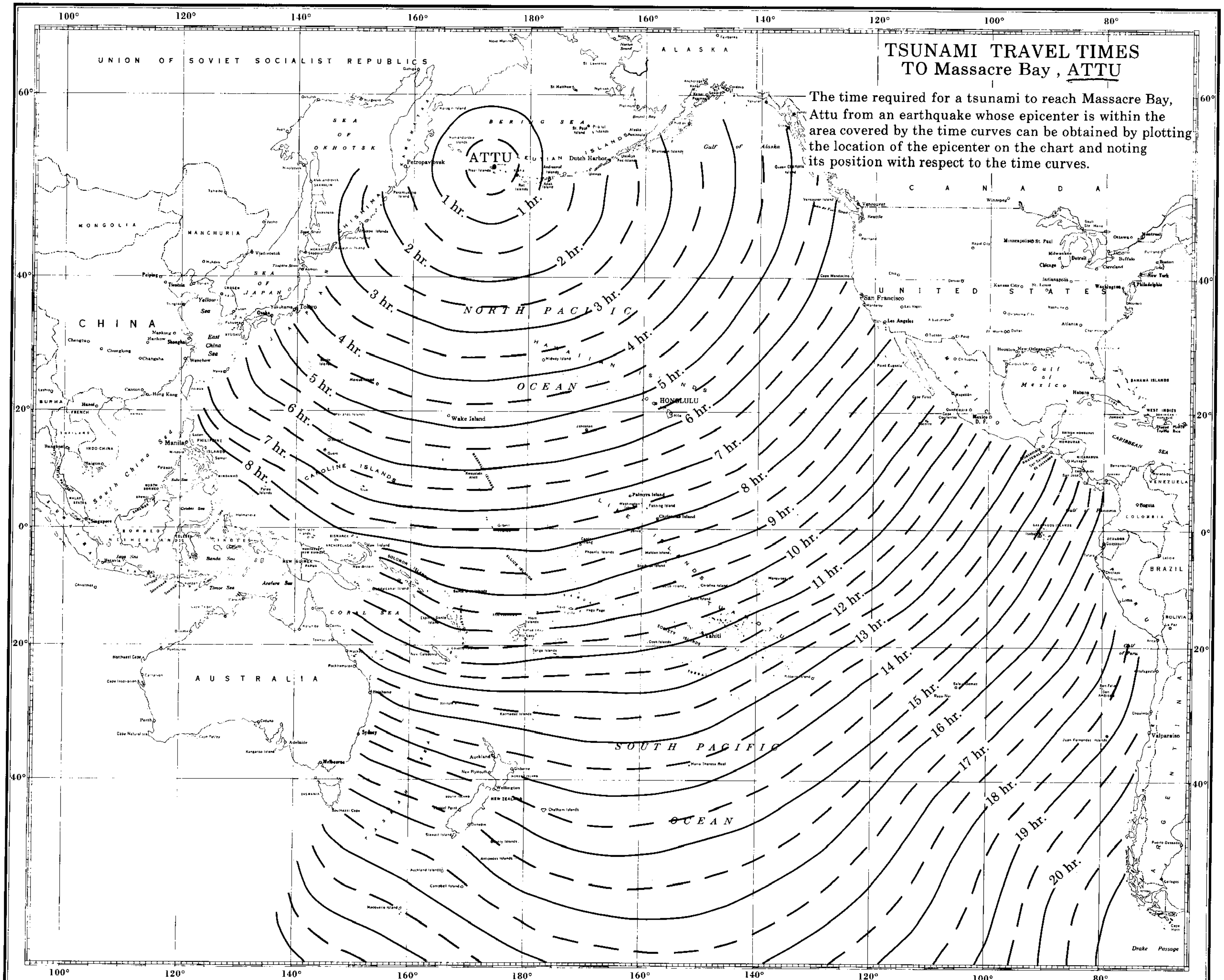

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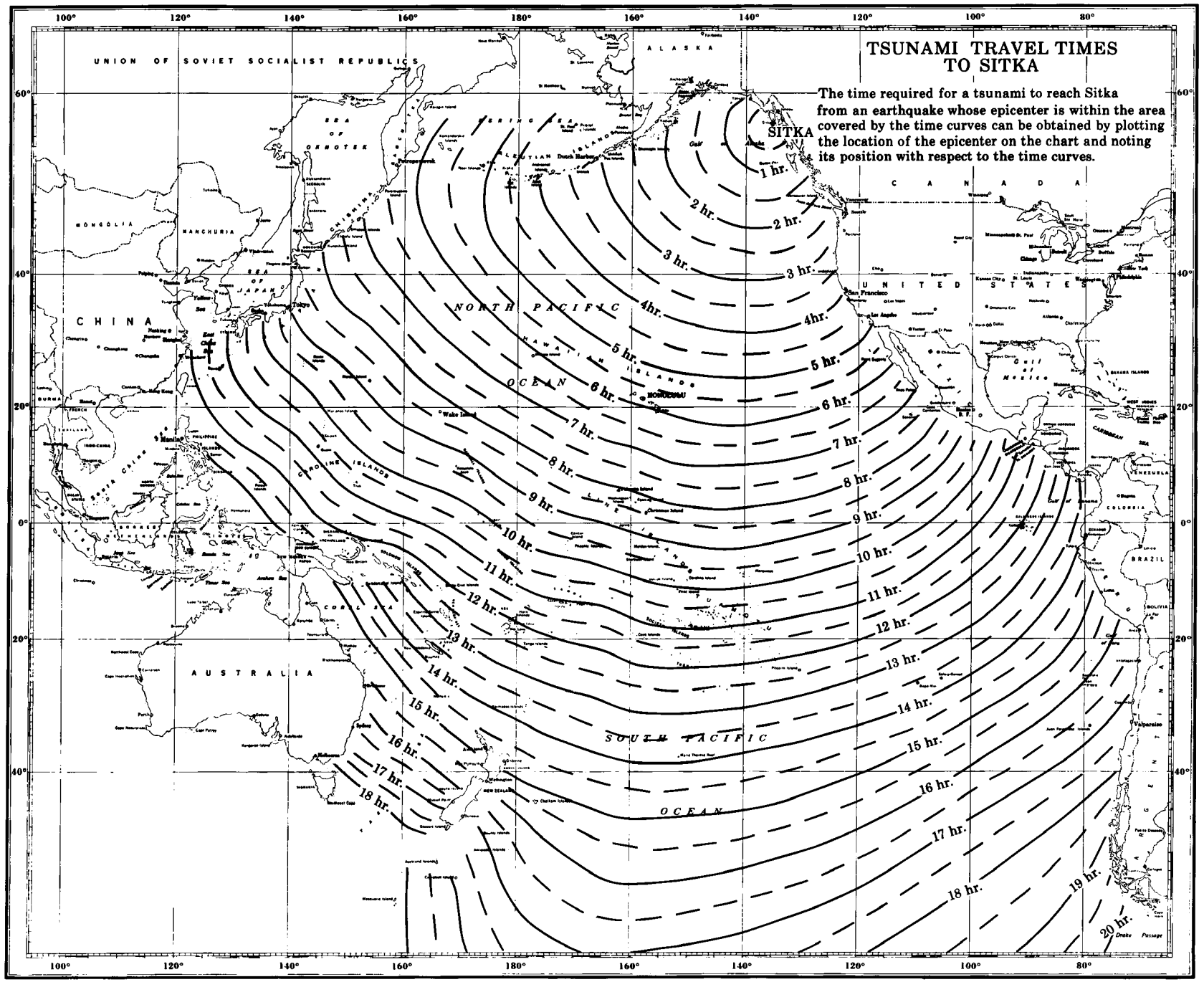

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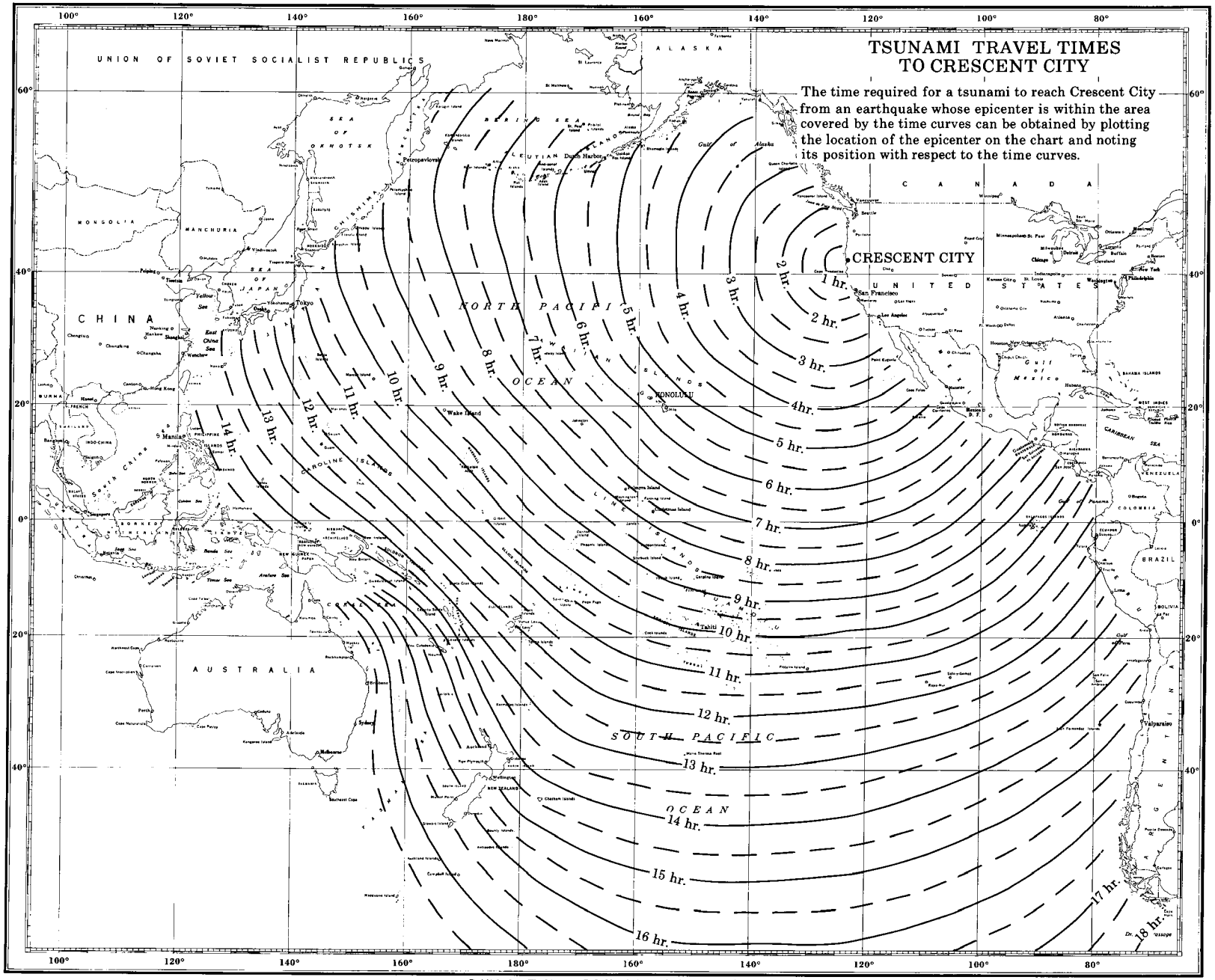

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